

Thursday, October 15, 2009 (file cac241)

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Subj: Water Conservation

Background: This paper extends the discussions from CAC240 that emphasized aquifers and takes a look at the biological requirements of landscape plants

Ref A: S. Herman, Governor signs 478 of 705 bills sent by legislators, ER. Tuesday Oct 13, 2009, 5B

Ref B: <http://fw.vt.edu/forestbiology/hmlttext/chapter4.htm>, Water relations.

Ref C: [http://www.uic.edu/classes/bios100/lectures/pl\\_trans.htm](http://www.uic.edu/classes/bios100/lectures/pl_trans.htm), Transport in plants

Ref D: <http://www.uni-hamburg.de/b-online/e22/22c.htm>, Osmosis

Ref E: L.Taiz & E Zeigler, Plant physiology, Benjamin/Cummings 1991

Ref F: R. Harris et-al, Arboriculture, Integrated management of landscape, trees, shrubs & vines, Prentice Hall 1999

Highlights and commentary:

1. Ref A cryptically announced a 20% reduction in water use by 2020, a state wide ground water monitoring program and appointment of a stewardship/delta conservation commission.
2. References B-E takes a progressively deeper cut into the water requirements of plants and measurement procedures. The 4th grade and above audience should develop a working vocabulary and a sense of awe at the wonders of the plant world as a preface to attacking the problem of water management.
3. Ref F chapter 12 on water management should be the prime focus of the general plan approach to reduced water use by minimizing irrigation. Ideally the irrigation system should nominally just replace the historic evapotranspiration (ET) at a particular time of the year in addition to the special requirements for a particular plant species. Ground cover, mulches and soil preparation can drive down the ET requirements. In Butte county's Mediterranean climate zone, rainfall will not be a dominate factor in replacing ET during the prime growing seasons. Irrigation application efficiency (AE) can range from .75 to .9. Ideally the historic AE should be tweaked by the current AE that is driven by meteorological conditions. Hopefully, U.C. Berkeley will provide a detailed list of correction factors for our county dependent on species, microclimate, planting densities and the crop coefficients over time. Moisture monitoring with tensiometers before and after irrigation can be used to fine tune the irrigation schedule. Special problems such as salt accumulation in the root zone from the use of recycled water may require heavy irrigation/leaching or application of gypsum. An indication of plant stress by observation wilting/leaf drop from indicator vegetation, beetle population densities or turgor pressure measurement of twigs may be necessary under drought conditions for selective irrigation.

